

# RPLI

## Counter-current flow heat recovery unit with inverter motor

- Compact dimensions
- EC fan Plug-fan
- Versions with water coil or electric for the post-heating
- Horizontal installation



### DESCRIPTION

The RPLI heat recoveries, for horizontal inside installation allow the combination of maximum comfort with a safe energy saving. It is more and more necessary in modern systems to create a forced ventilation, but also involves the expulsion of climate-controlled air, thus determining a higher energy consumption.

The unit is equipped with a counter-current heat recovery unit and allows an effective heat exchange between the expulsion air flow and fresh air that is pre-heated or pre-cooled, depending on the season, thus saving the energy that would otherwise be lost with the expelled exhaust air.

They can be integrated in the direct expansion and hydronic systems both in heating and cooling mode.

### VERSIONS

#### Horizontal installation:

RPLI (L o P): L low , P high, useful static pressure

RPLI\_E: With electric heating coil.

#### RPLI\_W: With water coil:Cooled / hot

#### Also to be used with cooled water:

- For sizes 030-100 in flow orientation 1 (°);
- Sizes 070-100 with flow orientation 2 (X), **in this configuration, the coil is not available for sizes 030-050;**

#### The following can only be used with hot water:

- **Sizes 140-400 with any type of flow configuration (° and X).**

### FEATURES

- Plug-fan radial fan with EC motors;
- **Aluminium plate counter-current flow heat recovery unit with heating efficiency in compliance with the European regulation 1253, housing in condensate collection basin;**
- **Ventilation by-pass of the external air flow equipped with internal damper, with free cooling and even anti-freeze function;**
- **Synthetic filter class M5 according to EN779 placed on the expelled air intake;**
- **Synthetic filter class F7 according to EN779 placed on the external air inlet;**

- Filters fouling pressure switches assembled;
- Self-supporting sandwich panels in galvanised sheet metal with injected polyurethane insulation density 45 kg/m<sup>3</sup> and a thickness of 25 mm. The polyurethane is in compliance with the standard UL 94 class HBF and the panel with the standard NF P 512: 1986 in class M1;
- Condensate collection basin in galvanised steel;
- Easy accessible fans, from bottom for the sizes 030-100, from the side for the sizes 140-400;
- Accessible filters, from the top and from the bottom for the sizes 030-100, from the side for the sizes 140-400;
- The fan can be controlled with a 0-10 Vdc controller, RVC or RVCL accessory.

### ACCESSORIES

#### Regulation

**HRB:** Electrical panel (IP56) to be installed outside the heat recovery unit. It is formed of a plastic electric box 300x220x120. It houses an electronic board for controlling the loads, 4 NTC temperature probes (6m long), a 4-pole serial cable + shield for connecting the control card to the user interface of the system, and an interface panel. Via the configuration of 10 DIP switches, the electronic board in the kit can control: an electric heater for pre-warming the air taken in from the room; up to 2 electric heaters (with cascade management) for the post-treatment of the fresh air delivered back into the room; a component for air purification (e.g. UV lamp, Plasmacluster, etc.).

**RVC:** Speed regulator supplied in n°2 pieces.

#### Additional modules

**M4F:** External module equipped with pre-filters class G4 (according to EN779) to be placed on the external air inlet.

**MBF:** External module with water cooling coil and condensate collection basin (only for sizes 140-400).

**MBF\_X:** External module with water cooling coil and condensate collection basin (only for sizes 140X-400X).

**MBP:** Module with post-heating water coil.

**MBE:** Module with electric coil (anti-freeze and/or post-heating function).

**MSU:** Module equipped with silencer baffles. The accessory is supplied in n°1 piece.

**FGC:** Circular flanges. The accessory is supplied in n°1 piece.

**Adjustment accessories**

**TWWV050:** 3-way valve (the valve body only - does not include the pipe kit for connection to the heat recovery unit or external module with coil) PN16 KVS 1.0 DN15.

**TWWV100:** 3-way valve (the valve body only - does not include the pipe kit for connection to the heat recovery unit or external module with coil) PN16 KVS 2.5 DN15.

**TWWV400:** 3-way valve (the valve body only - does not include the pipe kit for connection to the heat recovery unit or external module with coil) PN16 KVS 6.3 DN20.

**TF100:** DN15 threaded couplings with shank and flat-seal idle nut for heat recovery unit / external module with coil.

**TF400:** DN20 threaded couplings with shank and flat-seal idle nut for heat recovery unit / external module with coil.

**TWWVA:** Actuator for 3-way valve 24V, for receiving ON-OFF or modulating commands (0-10V), for correct operation provide the VMF-MOD accessory.

**FCDA:** Servomotor for free cooling damper.

**VMF-MOD:** Expansion board for the management of modulating valves.

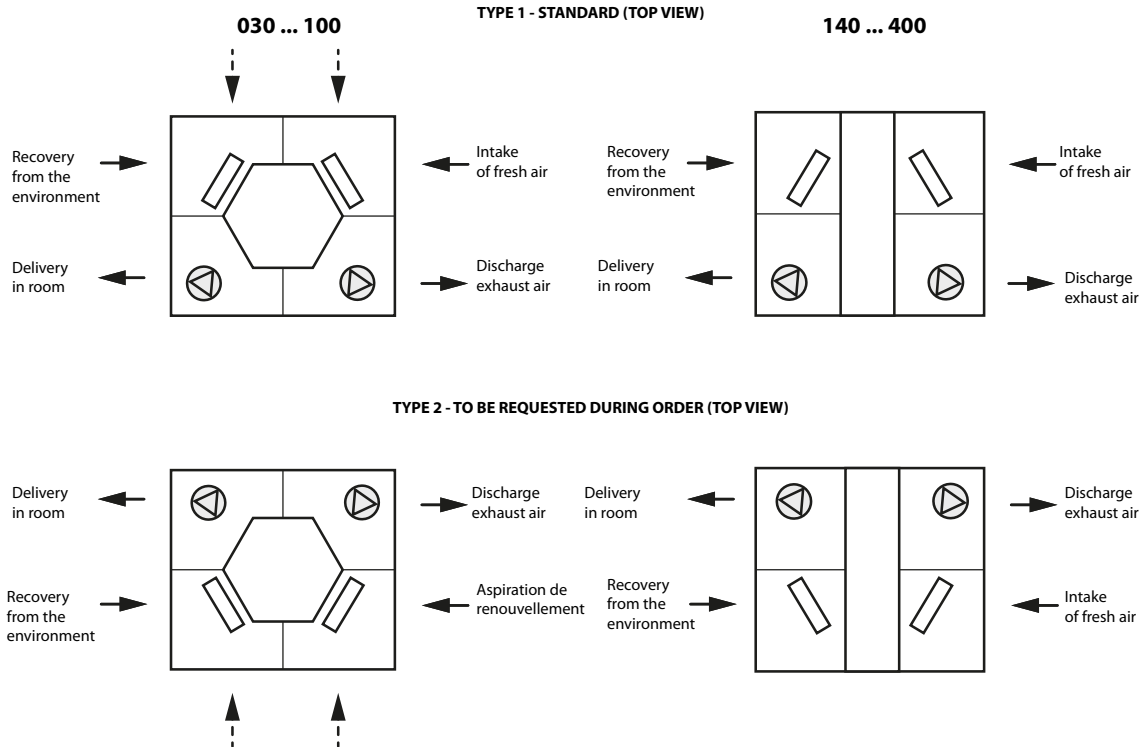
**CONFIGURATOR**

Field	Description
1,2,3,4	RPLI
5,6,7	Size 030, 050, 070, 100, 140, 200, 300, 400
8	Version
L	Low useful static pressure
P	High useful static pressure
9	Installation
°	Horizontal
10	Flow orientation
°	Type 1
X	Type 2
11	Exchanger
°	No internal coil
E	Post-heating electric internal coil
W	Water coil (1)

(1) Can also be used with chilled water: with sizes 030-100 in flow orientation 1 (°), 070-100 in flow orientation 2 (X); the coil is not available for sizes 030-050 with flow orientation 2 (X). Sizes 140-400 can only

be used with hot water.

**AVAILABLE ORIENTATION**



## ACCESSORIES COMPATIBILITY

### Regulation

#### Regulation and control panel (outside the heat recovery unit)

Ver	030	050	070	100	140	200	300	400
L,P	HRB	HRB	HRB	HRB	HRB	HRB	HRB	HRB

#### Speed regulator

Ver	030	050	070	100	140	200	300	400
L	RVC40	RVCL	RVCL	RVC40	RVCL	RVC40	RVC40	RVC40
P	RVC40	RVC40	RVC40	RVC40	RVC40	RVC40	RVC40	RVC40

### Additional modules

#### External module equipped with pre-filters

Ver	030	050	070	100	140	200	300	400
L,P	M4F03	M4F05	M4F07	M4F10	M4F14	M4F20	M4F30	M4F40

#### External module with water cooling coil

Ver	030	050	070	100	140	200	300	400
L,P	-	-	-	-	MBF14	MBF20	MBF30	MBF40

The accessory cannot be fitted on the configurations indicated with -

Ver	030	050	070	100	140	200	300	400
L,P	-	-	-	-	MBF14X	MBF20X	MBF30X	MBF40X

The accessory cannot be fitted on the configurations indicated with -

#### 3 way valve kit

Accessory	MBF14	MBF14X	MBF20	MBF20X	MBF30	MBF30X	MBF40	MBF40X
TWWV020	*	*	*	*				
TWWV400					*	*	*	*

#### Threaded coupling

Accessory	MBF14	MBF14X	MBF20	MBF20X	MBF30	MBF30X	MBF40	MBF40X
TF100	*	*	*	*				
TF400					*	*	*	*

#### Actuator for valves

Accessory	MBF14	MBF14X	MBF20	MBF20X	MBF30	MBF30X	MBF40	MBF40X
TWWVA	*	*	*	*	*	*	*	*

#### Module with post-heating water coil.

Ver	030	050	070	100	140	200	300	400
L,P	MBP03	MBP05	MBP07	MBP10	MBP14	MBP20	MBP30	MBP40

#### Module with electric coil

Ver	030	050	070	100	140	200	300	400
L,P	MBE03	MBE05	MBE07	MBE10	MBE14	MBE20	MBE30	MBE40

#### Module equipped with silencer baffles

Ver	030	050	070	100	140	200	300	400
L,P	MSU03	MSU05	MSU07	MSU10	MSU14	MSU20	MSU30	MSU40

#### Circular flanges

Ver	030	050	070	100	140	200	300	400
L,P	FGC030	FGC050	FGC070	FGC100	FGC140	FGC200	FGC300	FGC400

### Accessories

#### 3 way valve kit

Ver	030	050	070	100	140	200	300	400
L,P	TWWV050	TWWV050	TWWV100	TWWV100	TWWV400	TWWV400	TWWV400	TWWV400

#### Threaded coupling

Ver	030	050	070	100	140	200	300	400
L,P	TF100	TF100	TF100	TF100	TF400	TF400	TF400	TF400

#### Actuator for 3-way valves

Ver	030	050	070	100	140	200	300	400
L,P	TWWVA	TWWVA	TWWVA	TWWVA	TWWVA	TWWVA	TWWVA	TWWVA

#### Free cooling damper actuator

Ver	030	050	070	100	140	200	300	400
L,P	FCDA	FCDA	FCDA	FCDA	FCDA	FCDA	FCDA	FCDA

## Expansion board for managing the modulating valves

Ver	030	050	070	100	140	200	300	400
L,P	VMF-MOD	VMF-MOD	VMF-MOD	VMF-MOD	VMF-MOD	VMF-MOD	VMF-MOD	VMF-MOD

## PERFORMANCE SPECIFICATIONS

### RPLI - L

Size		030	050	070	100	140	200	300	400
<b>Heat recovery unit</b>									
Power supply		230V~50Hz	230V~50Hz	230V~50Hz	230V~50Hz	230V~50Hz	230V~50Hz	230V~50Hz	400V 3~50Hz
Unit type		UVNR (non-residential ventilation unit)							
Heat recovery system type	Type/n°	Static at counter-current flow / 1							
Heat capacity recovered (EN308) (1)	kW	1,6	2,4	3,6	4,8	7,1	10,0	14,9	19,7
Dry heating efficiency (2)	%	81,1	78,1	76,8	75,3	76,0	76,3	75,5	75,6
<b>Information in compliance with Annex V of regulation EU no. 1253/2014</b>									
Nominal air flow rate supply / recovery	m³/s	0,08	0,13	0,19	0,26	0,39	0,54	0,82	1,08
Nominal air flow rate supply / recovery	m³/h	300	450	700	950	1400	1950	2950	3900
Minimum air flow rate	m³/h	200	250	400	550	800	1150	1750	2350
<b>Fans (3)</b>									
Commissioning	type	Analogue signal of EC fan (0-10Vdc)							
Type	type	EC							
Number	no.	2	2	2	2	4	2	2	2
Supplied electrical power consumption	kW	0,07	0,09	0,14	0,21	0,33	0,45	0,47	0,73
Recovered electrical power consumption	kW	0,06	0,09	0,14	0,20	0,31	0,41	0,44	0,69
Total input electric power	kW	0,13	0,17	0,28	0,41	0,64	0,86	0,91	1,42
SFP int.	W/(m³/s)	820,00	953,00	907,00	1120,00	1132,00	1103,00	748,00	928,00
SFP int. lim. 2018	W/(m³/s)	1329	1234	1185	1131	1132	1118	1053	1015
Filters face velocity	m/s	0,8	1,2	1,0	1,4	2,2	2,2	1,9	2,5
Nominal external pressure Δp (3)	Pa	100	100	110	110	110	110	110	110
Useful static supply pressure	Pa	323	401	191	143	112	110	132	196
Useful static recovery pressure	Pa	328	416	198	161	154	149	164	242
Supplied internal pressure drop Δps int.	Pa	115	228	189	293	268	270	245	290
Recovered internal pressure drop Δps int.	Pa	110	213	182	274	228	230	213	244
Fans static efficiency (4)	%	35.8%	57.0%	57.0%	59.7%	57.0%	49.2%	67.2%	66.9%
Internal leakage (5)	%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%
External leakage	%	<3%	<3%	<3%	<3%	<3%	<3%	<3%	<3%
<b>Air filter</b>									
Expelled air filter	Type/n°	M5/1							
Delivery air filter	Type/n°	F7/1							
Delivery filter energy classification		On request							
Recovery filter energy classification		On request							

(1) Expelled air: Tdb=25°C; Twb<14°C. Fresh air: Tdb=5°C.

(2) Relation between the inlet air heating gain and the expulsion air heating loss, both relating to the outside temperature, measured in dry reference conditions, with balanced mass flow and an internal/external air heating difference of 20K, excluding the heating gain generated by the fan motors and the internal leakage.

(3) Performances referring to clean filters

(4) According to regulation EU 327/2011

(5) External leakage test performed at +400 Pa and -400 Pa; internal leakage test performed at 250 Pa

## RPLI - P

Size		030	050	070	100	140	200	300	400
<b>Heat recovery unit</b>									
Power supply		230V~50Hz	230V~50Hz	230V~50Hz	230V~50Hz	230V~50Hz	230V~50Hz	400V 3~50Hz	400V 3~50Hz
Unit type		UVNR (non-residential ventilation unit)							
Heat recovery system type	Type/n°	Static at counter-current flow / 1							
Heat capacity recovered (EN308) (1)	kW	1,6	2,4	3,6	4,8	7,1	10,0	14,9	19,7
Dry heating efficiency (2)	%	81,1	78,1	76,8	75,3	76,0	76,3	75,5	75,6
<b>Information in compliance with Annex V of regulation EU no. 1253/2014</b>									
Nominal air flow rate supply / recovery	m <sup>3</sup> /s	0,08	0,13	0,19	0,26	0,39	0,54	0,82	1,08
Nominal air flow rate supply / recovery	m <sup>3</sup> /h	300	450	700	950	1400	1950	2950	3900
Minimum air flow rate	m <sup>3</sup> /h	200	250	400	550	800	1150	1750	2300
<b>Fans (3)</b>									
Commissioning	type	Analogue signal of EC fan (0-10Vdc)							
Type	type	EC							
Number	no.	2	2	2	2	2	4	4	2
Supplied electrical power consumption	kW	0,04	0,08	0,11	0,22	0,35	0,41	0,55	0,87
Recovered electrical power consumption	kW	0,04	0,08	0,11	0,21	0,33	0,38	0,50	0,82
Total input electric power	kW	0,09	0,16	0,23	0,42	0,68	0,79	1,04	1,69
SFP int.	W/(m <sup>3</sup> /s)	543,00	903,00	694,00	1116,00	1095,00	918,00	770,00	999,00
SFP int. lim. 2018	W/(m <sup>3</sup> /s)	1329	1234	1185	1131	1132	1118	1053	1015
Filters face velocity	m/s	0,8	1,2	1,0	1,4	2,2	2,2	1,9	2,5
Nominal external pressure Δp (3)	Pa	100	100	125	125	145	145	150	150
Useful static supply pressure	Pa	506	338	279	638	412	469	462	303
Useful static recovery pressure	Pa	511	353	285	656	452	509	493	349
Supplied internal pressure drop Δps int.	Pa	115	228	189	293	268	270	245	290
Recovered internal pressure drop Δps int.	Pa	110	213	182	274	228	230	213	244
Fans static efficiency (4)	%	61,7	61,7	61,7	57,2	57,2	61,8	66,9	62,7
Internal leakage (5)	%	3,9%	3,9%	3,9%	3,9%	3,9%	3,9%	3,9%	3,9%
External leakage	%	<3%	<3%	<3%	<3%	<3%	<3%	<3%	<3%
<b>Air filter</b>									
Expelled air filter	Type/n°	M5/1							
Delivery air filter	Type/n°	F7/1							
Delivery filter energy classification		On request							
Recovery filter energy classification		On request							

(1) Expelled air: Tdb=25°C; Twb<14°C. Fresh air: Tdb=5°C.

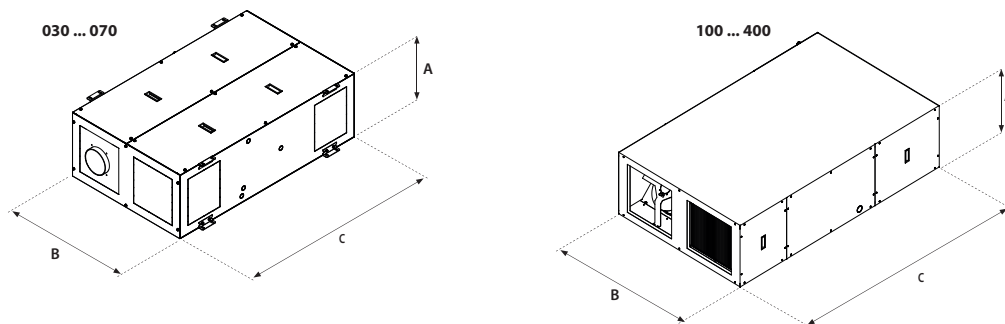
(2) Relation between the inlet air heating gain and the expulsion air heating loss, both relating to the outside temperature, measured in dry reference conditions, with balanced mass flow and an internal/external air heating difference of 20K, excluding the heating gain generated by the fan motors and the internal leakage.

(3) Performances referring to clean filters

(4) According to regulation EU 327/2011

(5) External leakage test performed at +400 Pa and -400 Pa; internal leakage test performed at 250 Pa

## DIMENSIONS AND WEIGHTS



Size		030	050	070	100	140	200	300	400
<b>Dimensions and weights</b>									
A	mm	400	400	435	435	460	460	600	600
B	mm	800	800	945	945	1100	1600	1700	2050
C	mm	1300	1300	1600	1600	1800	1800	2350	2350
Empty weight	kg	95	93	125	123	160	210	287	340

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